Journal of MOLECULAR BIOLOGY

EDITOR-IN-CHIEF
J. C. KENDREW

ASSISTANT EDITOR
S. BRENNER

EDITORIAL BOARD
C. R. Cantor
P. Chambon
W. W. Franke
M. Gellert
G. A. Gilbert
M. Gottesman
R. Huber
H. E. Huxley
A. Klug
V. Luzzati
J. H. Miller
M. F. Moody
K. Simons

VOLUME 156

25 March to 25 April 1982

ACADEMIC PRESS
London New York San Francisco

Copyright © 1982, by Academic Press Inc. (London) Ltd.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Printed in Great Britain

CONTENTS OF VOLUME 156

NUMBER 1, 25 MARCH 1982

HEILIG, R., MURASKOWSKY, R. and MANDEL, J.-L., The Ovalbumin Gene Family. The 5′ End Region of the *X* and *Y* Genes 1

MASON, P. J., TÖRÖK, I., KISS, I., KARCH, F. and UDVARDY, A., Evolutionary Implications of a Complex Pattern of DNA Sequence Homology Extending Far Upstream of the *hsp*70 Genes at Loci 87A7 and 87C1 in *Drosophila melanogaster* 21

FERSHT, A. R., KNILL-JONES, J. W. and TSUI, W.-C., Kinetic Basis of Spontaneous Mutation. Misinsertion Frequencies, Proofreading Specificities and Cost of Proofreading by DNA Polymerases of *Escherichia coli* 37

Appendix: Derivation of Cost-selectivity Equation 48

KOSIBA, B. E. and SCHLEIF, R., Arabinose-inducible Promoter from *Escherichia coli*. Its Cloning from Chromosomal DNA, Identification as the *araFG* Promoter and Sequence 53

MANCH, J. N. and CRAWFORD, I. P., Genetic Evidence for a Positive-acting Regulatory Factor Mediating Induction in the Tryptophan Pathway of *Pseudomonas aeruginosa* 67

POSPELOV, V., RUSSEV, G., VASSILEV, L. and TSANEV, R., Nucleosome Segregration in Chromatin Replicated in the Presence of Cycloheximide 79

HALL, M. N., SCHWARTZ, M. and SILHAVY, T. J., Sequence Information within the *lamB* Gene is Required for Proper Routing of the Bacteriophage λ Receptor Protein to the Outer Membrane of *Escherichia coli* K-12 . 93

JOHNSON, A. E., ADKINS, H. J., MATTHEWS, E. A. and CANTOR, C. R., Distance Moved by Transfer RNA during Translocation from the A Site to the P Site on the Ribosome 113

HARDWICKE, P. M. D., WALLIMANN, T. and SZENT-GYÖRGYI, A. G., Regulatory and Essential Light-chain Interactions in Scallop Myosin. I. Protection of Essential Light-chain Thiol Groups by Regulatory Light-chains . 141

WALLIMANN, T., HARDWICKE, P. M. D. and SZENT-GYÖRGYI, A. G., Regulatory and Essential Light-chain Interactions in Scallop Myosin. II. Photochemical Cross-linking of Regulatory and Essential Light-chains by Heterobifunctional Reagents 153

MCKAY, D. B., PICKOVER, C. A. and STEITZ, T. A., *Escherichia coli lac* Repressor is Elongated with its Operator DNA Binding Domains Located at Both Ends 175

WAJCMAN, H., AGUILAR I BASCOMPTE, J. L., LABIE, D., POYART, C. and BOHN, B., Structural and Functional Studies of Hemoglobin Barcelona ($\alpha_2\beta_2$ 94 Asp (FG_1) → His). Consequences of Altering an Important Intrachain Salt Bridge Involved in the Alkaline Bohr Effect 185

FINGER, L. R. and RICHARDSON, J. P., Stabilization of the Hexameric Form of *Escherichia coli* Protein rho Under ATP Hydrolysis Conditions . . 203

LETTER TO THE EDITOR

HUGOUVIEUX-COTTE-PATTAT, N. and ROBERT-BAUDOUY, J., Regulation and Transcription Direction of *exuR*, a Self-regulated Repressor in *Escherichia coli* K-12 221

NUMBER 2, 5 APRIL 1982

MIZUUCHI, K., MIZUUCHI, M. and GELLERT, M., Cruciform Structures in Palindromic DNA are Favored by DNA Supercoiling 229

HOROWITZ, H., CHRISTIE, G. E. and PLATT, T., Nucleotide Sequence of the *trpD* Gene, encoding Anthranilate Synthetase Component II of *Escherichia coli* 245

HOROWITZ, H. and PLATT, T., Identification of *trp-p2*, an Internal Promoter in the Tryptophan Operon of *Escherichia coli* 257

BARTON, P., MALCOLM, S., MURPHY, C. and FERGUSON-SMITH, M. A., Localization of the Human α-Globin Gene Cluster to the Short Arm of Chromosome 16 (16p12–16pter) by Hybridization *in situ* 269

KNEALE, G. G., FREEMAN, R. and MARVIN, D. A., Pf1 Bacteriophage Replication–Assembly Complex. X-ray Fibre Diffraction and Scanning Transmission Electron Microscopy 279

TSHUMPER, G. and CARBON, J., Delta Sequences and Double Symmetry in a Yeast Chromosomal Replicator Region 293

LEBKOWSKI, J. S. and LAEMMLI, U. K., Evidence for Two Levels of DNA Folding in Histone-depleted HeLa Interphase Nuclei 309

LEBKOWSKI, J. S. and LAEMMLI, U. K., Non-histone Proteins and Long-range Organization of HeLa Interphase DNA 325

LOTZ, B., GONTHIER-VASSAL, A., BRACK, A. and MAGOSHI, J., Twisted Single Crystals of *Bombyx mori* Silk Fibroin and Related Model Polypeptides with β Structure. A Correlation with the Twist of the β Sheets in Globular Proteins 345

SIPPL, M. J., On the Problem of Comparing Protein Structures. Development and Applications of a New Method for the Assessment of Structural Similarities of Polypeptide Conformations 359

Appendix 385

MATSUURA, Y., TAKANO, T. and DICKERSON, R. E., Structure of Cytochrome c_{551} from *Pseudomonas aeruginosa* Refined at 1·6 Å Resolution and Comparison of the Two Redox Forms 389

GOLDSMITH, E., SPRANG, S. and FLETTERICK, R., Structure of Maltoheptaose by Difference Fourier Methods and a Model for Glycogen 411

ANNOUNCEMENT 429

NUMBER 3, 15 APRIL 1982

KÜHLBRANDT, W. and UNWIN, P. N. T., Distribution of RNA and Protein in Crystalline Eukaryotic Ribosomes 431

MISCHKE, D. and PARDUE, M. L., Organization and Expression of α-Tubulin Genes in *Drosophila melanogaster*. One Member of the α-Tubulin Multigene Family is Transcribed in Both Oogenesis and Later Embryonic Development 449

ULLRICH, A., GRAY, A., GOEDDEL, D. V. and DULL, T. J., Nucleotide Sequence of a Portion of Human Chromosome 9 Containing a Leukocyte Interferon Gene Cluster 467

JEFFREYS, A. J., BARRIE, P. A., HARRIS, S., FAWCETT, D. H., NUGENT, Z. J. and BOYD, A. C., Isolation and Sequence Analysis of a Hybrid δ-globin Pseudogene from the Brown Lemur 487

ROSS, W., SHULMAN, M. and LANDY, A., Biochemical Analysis of *att*-defective Mutants of the Phage Lambda Site-specific Recombination System . 505

Appendix: ROSS, W. and LANDY, A., Anomalous Electrophoretic Mobility of Restriction Fragments Containing the *att* Region 523

DIMAIO, D. and NATHANS, D., Regulatory Mutants of Simian Virus 40. Effect of Mutations at a T Antigen Binding Site on DNA Replication and Expression of Viral Genes 531

FEINSTEIN, S. C., ROSS, S. R. and YAMAMOTO, K. R., Chromosomal Position Effects Determine Transcriptional Potential of Integrated Mammary Tumor Virus DNA 549

BERGMANN, I. E., CEREGHINI, S., GEOGHEGAN, T. and BRAWERMAN, G., Functional Characteristics of Untranslated Messenger Ribonucleoprotein Particles from Mouse Sarcoma Ascites Cells. Possible Relation to the Control of Messenger RNA Utilization 567

MORANDI, C., MASTERS, J. N., MOTTES, M. and ATTARDI, G., Multiple Forms of Human Dihydrofolate Reductase Messenger RNA. Cloning and Expression in *Escherichia coli* of their DNA Coding Sequence . . . 583

MATLIN, K. S., REGGIO, H., HELENIUS, A. and SIMONS, K., Pathway of Vesicular Stomatitis Virus Entry Leading to Infection 609

FULLER, M. T. and KING, J., Assembly *in Vitro* of Bacteriophage P22 Procapsids from Purified Coat and Scaffolding Subunits 633

LETTERS TO THE EDITOR

DE BOER, J. G. and BLOK, J., The Reaction of Bacteriophage T6 with Tryptophan. An Improved Description of T-even Tail-fibre Extension 667

JAKOWLEW, S. B., KHANDEKAR, P., DATTA, K., ARNOLD, H.-H., NARULA, S. K. and SIDDIQUI, M. A. Q., Molecular Cloning and Expression of Cardiac-specific Myosin Heavy Chain Gene Sequences in Chick Embryo 673

NUMBER 4, 25 APRIL 1982

ANDERSON, S., DE BRUIJN, M. H. L., COULSON, A. R., EPERON, I. C., SANGER, F. and YOUNG, I. G., Complete Sequence of Bovine Mitochondrial DNA. Conserved Features of the Mammalian Mitochondrial Genome . . 683

OU, J.-H., TRENT, D. W. and STRAUSS, J. H., The 3′-Non-coding Regions of Alphavirus RNAs Contain Repeating Sequences 719

LEHTOVAARA, P., SÖDERLUND, H., KERÄNEN, S., PETTERSSON, R. F. and KÄÄRIÄINEN, L., Extreme Ends of the Genome are Conserved and Rearranged in the Defective Interfering RNAs of Semliki Forest Virus . 731

DABAN, J.-R. and CANTOR, C. R., Structural and Kinetic Study of the Self-assembly of Nucleosome Core Particles 749

DABAN, J.-R. and CANTOR, C. R., Role of Histone Pairs H2A,H2B and H3,H4 in the Self-assembly of Nucleosome Core Particles 771

HOTANI, H., Micro-video Study of Moving Bacterial Flagellar Filaments. III. Cyclic Transformation Induced by Mechanical Force 791

KOZAK, M., Analysis of Ribosome Binding Sites from the s1 Message of Reovirus. Initiation at the First and Second AUG Codons . . . 807

COHEN, F. E., STERNBERG, M. J. E. and TAYLOR, W. R., Analysis and Prediction of the Packing of α-Helices against a β-Sheet in the Tertiary Structure of Globular Proteins 821

El-Yassin, D. I. and Fell, D. A., Comparison of the Applicability of Several Allosteric Models to the pH and 2,3-Bis(phospho)glycerate Dependence of Oxygen Binding by Human Blood 863

Appendix 1 883

Appendix 2 886

Goto, Y. and Hamaguchi, K., Unfolding and Refolding of the Constant Fragment of the Immunoglobulin Light Chain 891

Goto, Y. and Hamaguchi, K., Unfolding and Refolding of the Reduced Constant Fragment of the Immunoglobulin Light Chain. Kinetic Role of the Intrachain Disulfide Bond 911

Devaux, C., Zulauf, M., Boulanger, P. and Jacrot, B., Molecular Weight of Adenovirus Serotype 2 Capsomers. A New Characterization . . . 927

Index to Volume 156

Adenovirus serotype 2 capsomer molecular weights; a new characterization, 927

Adkins, H. J. (see also Johnson, A. E.), 113

Aguilar i Bascompte, J. L. (see also Wajcman, H.), 185

Alkaline Bohr effect and the consequences of altering an important salt bridge in hemoglobin Barcelona, 185

Allosteric models, comparison of their applicability to the pH and 2,3-bis(phospho)glycerate dependence of oxygen binding by human blood, 863

Alphavirus RNAs, the 3′-non-coding regions contain repeating sequences, 719

Anderson, S., de Bruijn, M. H. L., Coulson, A. R., Eperon, I. C., Sanger, F. & Young, I. G., Complete sequence of bovine mitochondrial DNA. Conserved features of the mammalian mitochondrial genome, 683

Anthranilate synthetase component II of *Escherichia coli*, nucleotide sequence of the encoding *trpD* gene, 245

Arabinose-inducible promoter from *Escherichia coli*. Its cloning from chromosomal DNA, identification as the *araFG* promoter and sequence, 53

araFG promoter from *Escherichia coli*, identification and sequence, 53

Arnold, H.-H. (see also Jakowlew, S. B.), 673

Ascites cells, mouse sarcoma, functional characteristics of untranslated messenger ribonucleoprotein particles; possible relation to the control of messenger RNA utilization, 567

Assembly *in vitro* of bacteriophage P22 procapsids from purified coat and scaffolding subunits, 633

——replication complex of Pf1 bacteriophage; X-ray fibre diffraction and scanning transmission electron microscopy, 279

ATP hydrolysis conditions used in study of stabilization of the hexameric form of *Escherichia coli* protein rho, 203

Attardi, G. (see also Morandi, C.), 583

att-defective mutants of the phage lambda site-specific recombination system, biochemical analysis, 505

att region-containing restriction fragments show anomalous electrophoretic mobility, 523

Bacterial flagellar filaments, a micro-video study of movement; cyclic transformation induced by mechanical force, 791

Bacteriophage λ receptor protein, sequence information within the *lamB* gene is required for its proper routing to the outer membrane of *Escherichia coli* K-12, 93

— lambda site-specific recombination system, biochemical analysis of *att*-defective mutants, 505

— P22 procapsids, assembly *in vitro* from purified coat and scaffolding subunits, 633

— Pf1 replication–assembly complex. X-ray fibre diffraction and scanning transmission electron microscopy, 279

— T6 reaction with tryptophan; an improved description of T-even tail-fibre extension, 667

Barrie, P. A. (see also Jeffreys, A. J.), 487

Barton, P., Malcolm, S., Murphy, C. & Ferguson-Smith, M. A., Localization of the human α-globin gene cluster to the short arm of chromosome 16 (16p12–16pter) by hybridization *in situ*, 269

Bergmann, I. E., Cereghini, S., Geoghegan, T. & Brawerman, G., Functional characteristics of untranslated messenger ribonucleoprotein particles from mouse sarcoma ascites cells. Possible relation to the control of messenger RNA utilization, 567

Binding sites, ribosome, from the s1 message of reovirus; initiation at the first and second AUG codons, 807

2,3-bis(phospho)glycerate and pH dependence of oxygen binding by human blood, comparison of the applicability of several allosteric models, 863

Blok, J. (see also de Boer, J. G.), 667

Blood, human, comparison of the applicability of several allosteric models to the pH and 2,3-bis(phospho)glycerate dependence of oxygen binding, 863

Bohn, B. (see also Wajcman, H.), 185

Bombyx mori silk fibroin, twisted single crystals; a correlation with the twist of the β sheets in globular proteins, 345

Boulanger, P. (see also Devaux, C.), 927

Bovine mitochondrial DNA, complete sequence; conserved features of the mammalian mitochondrial genome, 683

Brack, A. (see also Lotz, B.), 345
Brawerman, G. (see also Bergmann, I. E.), 567

Cantor, C. R. (see also Daban, J.-R.), 749, 771
— (see also Johnson, A. E.), 113
Capsomers, adenovirus serotype 2, molecular weight; a new characterization, 927
Carbon, J. (see also Tshumper, G.), 293
Cardiac-specific myosin heavy chain gene sequences in chick embryo, molecular cloning and expression, 673
Cereghini, S. (see also Bergmann, I. E.), 567
Christie, G. E. (see also Horowitz, H.), 245
Chromatin replicated in the presence of cycloheximide and nucleosome segregation, 79
Chromosomal position effects determine transcriptional potential of integrated mammary tumor virus DNA, 549
— replicator region in yeast, delta sequences and double symmetry, 293
Chromosome 9, human, nucleotide sequence of a portion containing a leukocyte interferon gene cluster, 467
— 16 (16p12–16pter), localization of the human α-globin gene cluster to the short arm, by hybridization *in situ*, 269
Cloning of *Escherichia coli* arabinose-inducible promoter from chromosomal DNA; identification as the *araFG* promoter and sequence, 53
— and expression in *Escherichia coli* of DNA coding sequence; multiple forms of human dihydrofolate reductase messenger RNA, 583
—, molecular, and expression of cardiac-specific myosin heavy chain gene sequences in chick embryo, 673
Coat and scaffolding subunits, purified, and the assembly *in vitro* of P22 procapsids, 633
Cohen, F. E., Sternberg, M. J. E. & Taylor, W. R., Analysis and prediction of the packing of α-helices against a β-sheet in the tertiary structure of globular proteins, 821
Constant fragment of the immunoglobulin light chain, unfolding and refolding, 891
— —, reduced, of the immunoglobulin light chain, unfolding and refolding; kinetic role of the intrachain disulfide bond, 911
Cost-selectivity equation derivation, 48
Coulson, A. R. (see also Anderson, S.), 683
Crawford, I. P. (see also Manch, J. N.), 67
Cross-linking, photochemical, of scallop myosin regulatory and essential light-chains by hetero-bifunctional reagents, 153
Cruciform structures in palindromic DNA are favored by DNA supercoiling, 229
Crystalline eukaryotic ribosomes, distribution of RNA and protein, 431
Crystals, single, twisted, of *Bombyx mori* silk fibroin and related model polypeptides with β structure; a correlation with the twist of the β sheets in globular proteins, 345
Cyclic transformation of flagella induced by mechanical force; a micro-video study of movement, 791
Cycloheximide, nucleosome segregation in chromatin replicated in its presence, 79
Cytochrome c_{551} from *Pseudomonas aeruginosa*, structure refined at 1·6 Å resolution, and comparison of the two redox forms, 389

Daban, J.-R. & Cantor, C. R., Role of histone pairs H2A,H2B and H3,H4 in the self-assembly of nucleosome core particles, 771
— & —, Structural and kinetic study of the self-assembly of nucleosome core particles, 749
Datta, K. (see also Jakowlew, S. B.), 673
de Boer, J. G. & Blok, J., The reaction of bacteriophage T6 with tryptophan. An improved description of T-even tail-fibre extension, 667
de Bruijn, M. H. L. (see also Anderson, S.), 683
Defective interfering RNAs of Semliki Forest virus, extreme ends of the genome are conserved and rearranged, 731
Delta sequences and double symmetry in a yeast chromosomal replicator region, 293
Devaux, C., Zulauf, M., Boulanger, P. & Jacrot, B., Molecular weight of adenovirus serotype 2 capsomers. A new characterization, 927
Dickerson, R. E. (see also Matsuura, Y.), 389
Dihydrofolate reductase messenger RNA, human, multiple forms; cloning and expression in *Escherichia coli* of their DNA coding sequence, 583

DiMaio, D. & Nathans, D., Regulatory mutants of simian virus 40. Effect of mutations at a T antigen binding site on DNA replication and expression of viral genes, 531
DNA, chromosomal, used for cloning of arabinose-inducible promoter from *Escherichia coli*; identification as the *araFG* promoter and sequence, 53
— folding in histone-depleted HeLa interphase nuclei, evidence for two levels, 309
—, HeLa interphase, non-histone proteins and long-range organization, 325
—, mammary tumor virus, integrated, chromosomal position effects determine transcriptional potential, 549
—, mitochondrial, bovine, complete sequence; conserved features of the mammalian mitochondrial genome, 683
—, operator, binding domains are located at both ends of elongated *Escherichia coli lac* repressor, 175
— polymerases of *Escherichia coli*, misinsertion frequencies, proofreading specificities and cost of proofreading; kinetic basis of spontaneous mutation, 37
— replication and expression of viral genes, effect of mutations at a T antigen binding site; regulatory mutants of SV40, 531
— sequence homology, a complex pattern extending far upstream of the *hsp*70 genes at loci 87A7 and 87C1 in *Drosophila melanogaster*; evolutionary implications, 21
— supercoiling favors cruciform structures in palindromic DNA, 229
Distance moved by transfer RNA during translocation from the A site to the P site on the ribosome, 113
Disulfide bond, intrachain, kinetic role; unfolding and refolding of the reduced constant fragment of the immunoglobulin light chain, 911
Double symmetry and delta sequences in a yeast chromosomal replicator region, 293
Drosophila melanogaster, evolutionary implications of a complex pattern of DNA sequence homology extending far upstream of the *hsp*70 genes at loci 87A7 and 87C1, 21
— —, organization and expression of α-tubulin genes; one member of the α-tubulin multigene family is transcribed in both oogenesis and later embryonic development, 449
Dull, T. J. (see also Ullrich, A.), 467

Electrophoretic mobility, anomalous, of restriction fragments containing the *att* region, 523
El-Yassin, D. I. & Fell, D. A., Comparison of the applicability of several allosteric models to the pH and 2,3-bis(phospho)glycerate dependence of oxygen binding by human blood, 863
Embryo, chick, molecular cloning and expression of cardiac-specific myosin heavy chain gene sequences, 673
Embryonic development and oogenesis in *Drosophila melanogaster*, one member of the multigene α-tubulin family is transcribed, 449
Eperon, I. C. (see also Anderson, S.), 683
Escherichia coli anthranilate synthetase component II, nucleotide sequence of the encoding *trpD* gene, 245
— — arabinose-inducible promoter: its cloning from chromosomal DNA, identification as the *araFG* promoter and sequence, 53
— —, cloning and expression of DNA coding sequence for multiple forms of human dihydrofolate reductase messenger RNA, 583
— —, identification of *trp-p2*, an internal promoter in the tryptophan operon, 257
— — K-12, regulation and transcription direction of *exuR*, a self-regulated repressor, 221
— — K-12, sequence information within the *lamB* gene is required for proper routing of the bacteriophage λ receptor protein to the outer membrane, 93
— — *lac* repressor is elongated with its operator DNA binding domains located at both ends, 175
— —; misinsertion frequencies, proofreading specificities and cost of proofreading by DNA polymerases; kinetic basis of spontaneous mutation, 37
— — protein rho, stabilization of the hexameric form under ATP hydrolysis conditions, 203
Evolutionary implications of a complex pattern of DNA sequence homology extending far upstream of the *hsp*70 genes at loci 87A7 and 87C1 in *Drosophila melanogaster*, 21
exuR, a self-regulated repressor in *Escherichia coli* K-12, regulation and transcription direction, 221

Fawcett, D. H. (see also Jeffreys, A. J.), 487
Feinstein, S. C., Ross, S. R. & Yamamoto, K. R., Chromosomal position effects determine transcriptional potential of integrated mammary tumor virus DNA, 549
Fell, D. A. (see also El-Yassin, D. I.), 863
Ferguson-Smith, M. A. (see also Barton, P.), 269

Fersht, A. R., Knill-Jones, J. W. & Tsui, W.-C., Kinetic basis of spontaneous mutation. Misinsertion frequencies, proofreading specificities and cost of proofreading by DNA polymerases of *Escherichia coli*, 37
Finger, L. R. & Richardson, J. P., Stabilization of the hexameric form of *Escherichia coli* protein rho under ATP hydrolysis conditions, 203
5′ end region of the *X* and *Y* genes of the ovalbumin family, 1
Flagellar filaments, bacterial, a micro-video study of movement; cyclic transformation induced by mechanical force, 791
Fletterick, R. (see also Goldsmith, E.), 411
Folding of DNA in histone-depleted HeLa interphase nuclei, evidence for two levels, 309
—: unfolding and refolding of the constant fragment of the immunoglobulin light chain, 891
—: — — — — — — reduced constant fragment of the immunoglobulin light chain; kinetic role of the intrachain disulfide bond, 911
Freeman, R. (see also Kneale, G. G.), 279
Fuller, M. T. & King, J., Assembly *in vitro* of bacteriophage P22 procapsids from purified coat and scaffolding subunits, 633

Gellert, M. (see also Mizuuchi, K.), 229
Gene cluster, α-globin, human, localization to the short arm of chromosome 16 (16p12–16pter) by hybridization *in situ*, 269
— —, interferon, leukocyte, is contained in nucleotide sequence of a portion of human chromosome 9, 467
— family, ovalbumin, the 5′ end region of the *X* and *Y* genes, 1
— *lamB* sequence information is required for proper routing of the bacteriophage λ receptor protein to the outer membrane of *Escherichia coli* K-12, 93
— sequences for embryonic chick cardiac myosin heavy chain, molecular cloning and expression, 673
— *trpD* nucleotide sequence, encoding anthranilate synthetase component II of *Escherichia coli*, 245
—, *hsp*70, at loci 87A7 and 87C1 in *Drosophila melanogaster*, evolutionary implications of a complex pattern of DNA sequence homology extending far upstream, 21
—, α-tubulin, organization and expression in *Drosophila melanogaster*; one member of the α-tubulin multigene family is transcribed in both oogenesis and later embryonic development, 449
Genetic evidence for a positive-acting regulatory factor mediating induction in the tryptophan pathway of *Pseudomonas aeruginosa*, 67
Genome, extreme ends are conserved and rearranged in the defective interfering RNAs of Semliki Forest virus, 731
—, mitochondrial, mammalian, conserved features; complete sequence of bovine mitochondrial DNA, 683
Geoghegan, T. (see also Bergmann, I. E.), 567
α-Globin gene cluster, human, localization to the short arm of chromosome 16 (16p12–16pter) by hybridization *in situ*, 269
δ-Globin pseudogene from the brown lemur, isolation and sequence analysis, 487
Globular proteins, analysis and prediction of the packing of α-helices against a β-sheet in the tertiary structure, 821
— —, a correlation with the twist of the β sheets; twisted single crystals of *Bombyx mori* silk fibroin and related model polypeptides with β structure, 345
Glycogen model, and the structure of maltoheptaose by difference Fourier methods, 411
Goeddel, D. V. (see also Ullrich, A.), 467
Goodsmith, E., Sprang, S. & Fletterick, R., Structure of maltoheptaose by difference Fourier methods and a model for glycogen, 411
Gonthier-Vassal, A. (see also Lotz, B.), 345
Goto, Y. & Hamaguchi, K., Unfolding and refolding of the constant fragment of the immunoglobulin light chain, 891
— & —, — — — — — — reduced constant fragment of the immunoglobulin light chain. Kinetic role of the intrachain disulfide bond, 911
Gray, A. (see also Ullrich, A.), 467

Hall, M. N., Schwartz, M. & Silhavy, T. J., Sequence information within the *lamB* gene is required for proper routing of the bacteriophage λ receptor protein to the outer membrane of *Escherichia coli* K-12, 93
Hamaguchi, K. (see also Goto, Y.), 891, 911

Hardwicke, P. M. D., Wallimann, T. & Szent-Györgyi, A. G., Regulatory and essential light-chain interactions in scallop myosin. I. Protection of essential light-chain thiol groups by regulatory light-chains, 141
— (see also Wallimann, T.), 153
Harris, S. (see also Jeffreys, A. J.), 487
Heilig, R., Muraskowsky, R. & Mandel, J.-L., The ovalbumin gene family. The 5′ end region of the *X* and *Y* genes, 1
HeLa interphase DNA, non-histone proteins and long-range organization, 325
— — nuclei, histone-depleted, evidence for two levels of DNA folding, 309
Helenius, A. (see also Matlin, K. S.), 609
α-Helices, packing against a β-sheet in the tertiary structure of globular proteins; analysis and prediction, 821
Hemoglobin Barcelona, structural and functional studies; consequences of altering an important intrachain salt bridge involved in the alkaline Bohr effect, 185
Histone-depleted HeLa interphase nuclei, evidence for two levels of DNA folding, 309
— pairs H2A,H2B and H3,H4, role in the self-assembly of nucleosome core particles, 771
Horowitz, H., Christie, G. E. & Platt, T., Nucleotide sequence of the *trpD* gene, encoding anthranilate synthetase component II of *Escherichia coli*, 245
— & Platt, T., Identification of *trp-p2*, an internal promoter in the tryptophan operon of *Escherichia coli*, 257
Hotani, H., Micro-video study of moving bacterial flagellar filaments. III. Cyclic transformation induced by mechanical force, 791
*hsp*70 genes at loci 87A7 and 87C1 in *Drosophila melanogaster*, evolutionary implications of a complex pattern of DNA sequence homology extending far upstream, 21
Hugouvieux-Cotte-Pattat, N. & Robert-Baudouy, J., Regulation and transcription direction of *exuR*, a self-regulated repressor in *Escherichia coli* K-12, 221
Human blood, comparison of the applicability of several allosteric models to the pH and 2,3-bis(phospho)glycerate dependence of oxygen binding, 863
— chromosome 9, nucleotide sequence of a portion containing a leukocyte interferon gene cluster, 467
— dihydrofolate reductase messenger RNA, multiple forms; cloning and expression in *Escherichia coli* of their DNA coding sequence, 583
— α-globin gene cluster, localization to the short arm of chromosome 16 (16p12-16pter) by hybridization *in situ*, 269
Hybrid δ-globin pseudogene from the brown lemur, isolation and sequence analysis, 487

Immunoglobulin light chain, unfolding and refolding of the constant fragment, 891
— — —, — — — — — — reduced constant fragment; kinetic role of the intrachain disulfide bond, 911
Induction in the tryptophan pathway of *Pseudomonas aeruginosa*, genetic evidence for a positive-acting regulatory factor, 67
Integrated mammary tumor virus DNA, chromosomal position effects determine transcriptional potential, 549
Interferon gene cluster, leukocyte, is contained in nucleotide sequence of a portion of human chromosome 9, 467

Jacrot, B. (see also Devaux, C.), 927
Jakowlew, S. B., Khandekar, P., Datta, K., Arnold, H.-H., Narula, S. K. & Siddiqui, M. A. Q., Molecular cloning and expression of cardiac-specific myosin heavy chain gene sequences in chick embryo, 673
Jeffreys, A. J., Barrie, P. A., Harris, S., Fawcett, D. H. & Nugent, Z. J., Isolation and sequence analysis of a hybrid δ-globin pseudogene from the brown lemur, 487
Johnson, A. E., Adkins, H. J., Matthews, E. A. & Cantor, C. R., Distance moved by transfer RNA during translocation from the A site to the P site on the ribosome, 113

Kääriäinen, L. (see also Lehtovaara, P.), 731
Karch, F. (see also Mason, P. J.), 21
Keränen, S. (see also Lehtovaara, P.), 731
Khandekar, P. (see also Jakowlew, S. B.), 673
Kinetic basis of spontaneous mutation. Misinsertion frequencies, proofreading specificities and cost of proofreading by DNA polymerases of *Escherichia coli*, 37
— role of the intrachain disulfide bond; unfolding and refolding of the reduced constant fragment of the immunoglobulin light chain, 911

— and structural study of the self-assembly of nucleosome core particles, 749
KING, J. (see also FULLER, M. T.), 633
KISS, I. (see also MASON, P. J.), 21
KNEALE, G. G., FREEMAN, R. & MARVIN, D. A., Pf1 bacteriophage replication-assembly complex. X-ray fibre diffraction and scanning transmission electron microscopy, 279
KNILL-JONES, J. W. (see also FERSHT, A. R.), 37
KOSIBA, B. E. & SCHLEIF, R., Arabinose-inducible promoter from *Escherichia coli*. Its cloning from chromosomal DNA, identification as the *araFG* promoter and sequence, 53
KOZAK, M., Analysis of ribosome binding sites from the s1 message of reovirus. Initiation at the first and second AUG codons, 807
KÜHLBRANDT, W. & UNWIN, P. N. T., Distribution of RNA and protein in crystalline eukaryotic ribosomes, 431

λ (see also Bacteriophage), 93, 505
LABIE, D. (see also WAJCMAN, H.), 185
lac repressor of *Escherichia coli* is elongated with its operator DNA binding domains located at both ends, 175
LAEMMLI, U. K. (see also LEBKOWSKI, J. S.), 309, 325
lamB gene sequence information is required for proper routing of the bacteriophage λ receptor protein to the outer membrane of *Escherichia coli* K-12, 93
LANDY, A. (see also ROSS, W.), 505
LEBKOWSKI, J. S. & LAEMMLI, U. K., Evidence for two levels of DNA folding in histone-depleted HeLa interphase nuclei, 309
— & —, Non-histone proteins and long-range organization of the HeLa interphase DNA, 325
LEHTOVAARA, P., SÖDERLUND, H., KERÄNEN, S., PETTERSSON, R. F. & KÄÄRIÄINEN, L., Extreme ends of the genome are conserved and rearranged in the defective interfering RNAs of Semliki Forest virus, 731
Lemur, brown, isolation and sequence analysis of a hybrid δ-globin pseudogene, 487
Leukocyte interferon gene cluster is contained in nucleotide sequence of a portion of human chromosome 9, 467
Light-chain interactions in scallop myosin; photochemical crosslinking of regulatory and essential light-chains by heterobifunctional reagents, 153
— — — — — —; protection of essential light-chain thiol groups by regulatory light-chains, 141
LOTZ, B., GONTHIER-VASSAL, A., BRACK, A. & MAGOSHI, J., Twisted single crystals of *Bombyx mori* silk fibroin and related model polypeptides with β structure. A correlation with the twist of the β sheets in globular proteins, 345

MCKAY, D. B., PICKOVER, C. A. & STEITZ, T. A., *Escherichia coli lac* repressor is elongated with its operator DNA binding domains located at both ends, 175
MAGOSHI, J. (see also LOTZ, B.), 345
MALCOLM, S. (see also BARTON, P.), 269
Maltoheptaose structure by difference Fourier methods and a model for glycogen, 411
Mammalian mitochondrial genome, conserved features; complete sequence of bovine mitochondrial DNA, 683
Mammary tumor virus (see also Virus), 549
MANCH, J. N. & CRAWFORD, I. P., Genetic evidence for a positive-acting regulatory factor mediating induction in the tryptophan pathway of *Pseudomonas aeruginosa*, 67
MANDEL, J.-L. (see also HEILIG, R.), 1
MARVIN, D. A. (see also KNEALE, G. G.), 279
MASON, P. J., TÖRÖK, I., KISS, I., KARCH, F. & UDVARDY, A., Evolutionary implications of a complex pattern of DNA sequence homology extending far upstream of the *hsp*70 genes at loci 87A7 and 87C1 in *Drosophila melanogaster*, 21
MASTERS, J. N. (see also MORANDI, C.), 583
MATLIN, K. S., REGGIO, H., HELENIUS, A. & SIMONS, K., Pathway of vesicular stomatitis virus entry leading to infection, 609
MATSUURA, Y., TAKANO, T. & DICKERSON, R. E., Structure of cytochrome c_{551} from *Pseudomonas aeruginosa* refined at 1·6 Å resolution and comparison of the two redox forms, 389
MATTHEWS, E. A. (see also JOHNSON, A. E.), 113
Messenger RNA, dihydrofolate reductase, human, multiple forms; cloning and expression in *Escherichia coli* of their DNA coding sequence, 583

— — utilization control and the functional characteristics of untranslated messenger ribonucleoprotein particles from mouse sarcoma ascites cells, 567
Micro-video study of moving bacterial flagellar filaments: cyclic transformation induced by mechanical force, 791
MISCHKE, D. & PARDUE, M. L., Organization and expression of α-tubulin genes in *Drosophila melanogaster*. One member of the α-tubulin multigene family is transcribed in both oogenesis and later embryonic development, 449
Misinsertion frequencies, proofreading specificities and cost of proofreading by DNA polymerases of *Escherichia coli*; kinetic basis of spontaneous mutation, 37
Mitochondrial DNA, bovine, complete sequence; conserved features of the mammalian mitochondrial genome, 683
MIZUUCHI, K., MIZUUCHI, M. & GELLERT, M., Cruciform structures in palindromic DNA are favored by DNA supercoiling, 229
MIZUUCHI, M. (see also MIZUUCHI, K.), 229
Molecular weight of adenovirus serotype 2 capsomers; a new characterization, 927
MORANDI, C., MASTERS, J. N., MOTTES, M. & ATTARDI, G., Multiple forms of human dihydrofolate reductase messenger RNA. Cloning and expression in *Escherichia coli* of their DNA coding sequences, 583
MOTTES, M. (see also MORANDI, C.), 583
Mouse sarcoma ascites cells, functional characteristics of untranslated messenger ribonucleoprotein particles; possible relation to the control of messenger RNA utilization, 567
MURASKOWSKY, R. (see also HEILIG, R.), 1
MURPHY, C. (see also BARTON, P.), 269
Mutants, *att*-defective, of the phage lambda site-specific recombination system, biochemical analysis, 505
—, regulatory, of simian virus 40. Effect of mutations at a T antigen binding site on DNA replication and expression of viral genes, 531
Mutation, spontaneous, kinetic basis; misinsertion frequencies, proofreading specificities and cost of proofreading by DNA polymerases of *Escherichia coli*, 37
Myosin heavy chain gene sequences, cardiac-specific, in chick embryo; molecular cloning and expression, 673
—, scallop, regulatory and essential light-chain interactions; photochemical cross-linking of regulatory and essential light-chains by heterobifunctional reagents, 153
—, —, — — — — — —; protection of essential light-chain thiol groups by regulatory light-chains, 141

NARULA, S. K. (see also JAKOWLEW, S. B.), 673
NATHANS, D. (see also DIMAIO, D.), 531
Nucleosome core particles, role of histone pairs H2A,H2B and H3,H4 in self-assembly, 771
— — —, structural and kinetic study of self-assembly, 749
— segregation in chromatin replicated in the presence of cycloheximide, 79
Nucleotide sequence of a portion of human chromosome 9 containing a leukocyte interferon gene cluster, 467
— — — the *trpD* gene, encoding anthranilate synthetase component II of *Escherichia coli*, 245
NUGENT, Z. J. (see also JEFFREYS, A. J.), 487

Oogenesis and later embryonic development in *Drosophila melanogaster*, one member of the α-tubulin multigene family is transcribed, 449
Operator DNA binding domains are located at both ends of elongated *Escherichia coli lac* repressor, 175
Organization, long-range, and non-histone proteins of HeLa interphase DNA, 325
OU, J.-H., TRENT, D. W. & STRAUSS, J. H., The 3′-non-coding regions of alphavirus RNAs contain repeating sequences, 719
Outer membrane of *Escherichia coli* K-12, sequence information within the *lamB* gene is required for proper routing of the bacteriophage λ receptor protein, 93
Ovalbumin gene family, the 5′ end region of the *X* and *Y* genes, 1
Oxygen binding by human blood, comparison of the applicability of several allosteric models to the pH and 2,3-bis(phospho)glycerate dependence, 863

P22 (see also Bacteriophage), 633
Packing of α-helices against a β-sheet in the tertiary structure of globular proteins, analysis and prediction, 821
Palindromic DNA, cruciform structures are favored by DNA supercoiling, 229

Pardue, M. L. (see also Mischke, D.), 449
Pathway of vesicular stomatitis virus entry leading to infection, 609
Pettersson, R. F. (see also Lehtovaara, P.), 731
Pf1 (see also Bacteriophage), 279
pH and 2.3 bis(phospho)glycerate dependence of oxygen binding by human blood, comparison of the applicability of several allosteric models, 863
Photochemical cross-linking of scallop myosin regulatory and essential light-chains by heterobifunctional reagents, 153
Pickover, C. A. (see also McKay, D. B.), 175
Platt, T. (see also Horowitz, H.), 245, 257
Position effects, chromosomal, determine transcriptional potential of integrated mammary tumor virus DNA, 549
Pospelov, V., Russev, G., Vassilev, L. & Tsanev, R., Nucleosome segregation in chromatin replicated in the presence of cycloheximide, 79
Poyart, C. (see also Wajcman, H.), 185
Procapsids, P22, assembly *in vitro* from purified coat and scaffolding subunits, 633
Promoter, arabinose-inducible, from *Escherichia coli*. Its cloning from chromosomal DNA, identification as the *araFG* promoter and sequence, 53
Proofreading specificities, cost of proofreading and misinsertion frequencies for DNA polymerase of *Escherichia coli*; kinetic basis of spontaneous mutation, 37
Protein rho, *Escherichia coli*, stabilization of the hexameric form under ATP hydrolysis conditions, 203
— and RNA, distribution in crystalline eukaryotic ribosomes, 431
— structures, on the problem of their comparison; development and applications of a new method for the assessment of structural similarities of polypeptide conformations, 359
Proteins, non-histone, and long-range organization of HeLa interphase DNA, 325
Pseudogene, δ-globin, hybrid, from the brown lemur, isolation and sequence analysis, 487
Pseudomonas aeruginosa, genetic evidence for a positive-acting regulatory factor mediating induction in the tryptophan pathway, 67
— —, structure of cytochrome c_{551} refined at 1·6 Å resolution and comparison of the two redox forms, 389

Recombination system, site-specific, λ, biochemical analysis of *att*-defective mutants, 505
Reggio, H. (see also Matlin, K. S.), 609
Regulation and transcription direction of *exuR*, a self-regulated repressor in *Escherichia coli* K-12, 221
Regulatory and essential light-chain interactions in scallop myosin; photochemical cross-linking of regulatory and essential light-chains by heterobifunctional reagents, 153
— — — — — — — — —; protection of essential light-chain thiol groups by regulatory light-chains, 141
— factor, positive-acting, mediating induction in the tryptophan pathway of *Pseudomonas aeruginosa*; genetic evidence, 67
— mutants of simian virus 40. Effect of mutations at a T antigen binding site on DNA replication and expression of viral genes, 531
Reovirus, analysis of ribosome binding sites from the s1 message; initiation at the first and second AUG codons, 807
Replicating region on a chromosome of yeast; delta sequences and double symmetry, 293
Replication of chromatin in the presence of cycloheximide, and nucleosome segregation, 79
—, DNA, and expression of viral genes, effect of mutations at a T antigen binding site; regulatory mutants of SV40, 531
— assembly complex of Pf1 bacteriophage; X-ray fibre diffraction and scanning transmission electron microscopy, 279
Repressor, *lac*, *Escherichia coli*, is elongated with its operator DNA binding domains located at both ends, 175
—, self-regulated, in *Escherichia coli* K-12, regulation and transcription direction of *exuR*, 221
Restriction fragments containing the *att* region, anomalous electrophoretic mobility, 523
RNA and protein, distribution in crystalline eukaryotic ribosomes, 431
RNAs, alphavirus, the 3′-non-coding regions contain repeating sequences, 719
—, defective interfering, of Semliki Forest virus, extreme ends of the genome are conserved and rearranged, 731
Ribonucleoprotein particles, messenger, untranslated, from mouse sarcoma ascites cells, functional characteristics; possible relation to the control of messenger RNA utilization, 567
Ribosome binding sites from the s1 message of reovirus; initiation at the first and second AUG codons, 807

—, distance moved by transfer RNA during translocation from the A site to the P site, 113
Ribosomes, eukaryotic, crystalline, distribution of RNA and protein, 431
RICHARDSON, J. P. (see also FINGER, L. R.), 203
ROBERT-BAUDOUY, J. (see also HUGOUVIEUX-COTTE-PATTAT, N.), 221
ROSS, S. R. (see also FEINSTEIN, S. C.), 549
ROSS, W., SHULMAN, M. & LANDY, A., Biochemical analysis of *att*-defective mutants of the phage lambda site-specific recombination system, 505
RUSSEV, G. (see also POSPELOV, V.), 79

S1 message of reovirus, and analysis of ribosome binding sites; initiation at the first and second AUG codons, 807
Salt bridge, intrachain, involved in the alkaline Bohr effect, consequences of its alteration in hemoglobin Barcelona, 185
SANGER, F. (see also ANDERSON, S.), 683
Sarcoma ascites cells, mouse, functional characteristics of untranslated messenger ribonucleoprotein particles; possible relation to the control of messenger RNA utilization, 567
Scaffolding and coat subunits, purified, and the assembly *in vitro* of P22 procapsids, 633
Scallop myosin light-chain interactions; photochemical cross-linking of regulatory and essential light-chains by heterobifunctional reagents, 153
— — — — —; protection of essential light-chain thiol groups by regulatory light-chains, 141
Scanning transmission electron microscopy and X-ray fibre diffraction of Pf1 bacteriophage replication–assembly complex, 279
SCHLEIF, R. (see also KOSIBA, B. E.), 53
SCHWARTZ, M. (see also HALL, M. N.), 93
Self-assembly of nucleosome core particles, role of histone pairs H2A,H2B and H3,H4, 771
— — — — — —, structural and kinetic study, 749
Semliki Forest virus (see also Virus), 731
Sequence analysis and isolation of a hybrid δ-globin pseudogene from the brown lemur, 487
— of arabinose-inducible promoter from *Escherichia coli*, 53
—, complete, of bovine mitochondrial DNA. Conserved features of the mammalian mitochondrial genome, 683
— homology, DNA, a complex pattern extending far upstream of the *hsp*70 genes at loci 87A7 and 87C1 in *Drosophila melanogaster*; evolutionary implications, 21
— information within the *lamB* gene is required for proper routing of the bacteriophage λ receptor protein to the outer membrane of *Escherichia coli* K-12, 93
—, nucleotide, of a portion of human chromosome 9 containing a leukocyte interferon gene cluster, 467
—, —, — the *trpD* gene, encoding anthranilate synthetase component II of *Escherichia coli*, 245
Sequences, delta, and double symmetry in a yeast chromosomal replicator region, 293
— of genes for embryonic chick cardiac myosin heavy chain, molecular cloning and expression, 673
—, repeating, are contained in the 3′-non-coding regions of alphavirus RNAs, 719
β-Sheet and α-helix packing in the tertiary structure of globular proteins, analysis and prediction, 821
SHULMAN, M. (see also ROSS, W.), 505
SIDDIQUI, M. A. Q. (see also JAKOWLEW, S. B.), 673
SILHAVY, T. J. (see also HALL, M. N.), 93
Silk fibroin, *Bombyx mori*, and related model polypeptides with β structure, twisted single crystals; a correlation with the twist of the β sheets in globular proteins, 345
Simian virus 40 regulatory mutants; effect of mutations at a T antigen binding site on DNA replication and expression of viral genes, 531
SIMONS, K. (see also MATLIN, K. S.), 609
SIPPL, M. J., On the problem of comparing protein structures. Development and applications of a new method for the assessment of structural similarities of polypeptide conformations, 359
SÖDERLUND, H. (see also LEHTOVAARA, P.), 731
SPRANG, S. (see also GOLDSMITH, E.), 411
Stabilization of the hexameric form of *Escherichia coli* protein rho under ATP hydrolysis conditions, 203
STEITZ, T. A. (see also MCKAY, D. B.), 175
STERNBERG, M. J. E. (see also COHEN, F. E.), 821
STRAUSS, J. H. (see also OU, J.-H.), 719
Structural and functional studies of hemoglobin Barcelona ($\alpha_2\beta_2$ 94 Asp (FG_1) → His); consequences of altering an important intrachain salt bridge involved in the alkaline Bohr effect, 185
— — kinetic study of the self-assembly of nucleosome core particles, 749

Structure of cytochrome c_{551} from *Pseudomonas aeruginosa* refined at 1·6 Å resolution and comparison of the two redox forms, 389
— — *Escherichia coli lac* repressor, 175
— — maltoheptaose by difference Fourier methods and a model for glycogen, 411
—, tertiary, of globular proteins, analysis and prediction of the packing of α-helices against a β-sheet, 821
Structures, cruciform, in palindromic DNA are favored by DNA supercoiling, 229
— of proteins, on the problem of their comparison; development and applications of a new method for the assignment of structural similarities of polypeptide conformations, 359
Supercoiled DNA favors cruciform structures in palindromic DNA, 229
SZENT-GYÖRGYI, A. G. (see also HARDWICKE, P. M. D.), 141
— — (see also WALLIMANN, T.), 153

T antigen binding site mutations, SV40, effect on DNA replication and expression of viral genes, 531
T6 (see also Bacteriophage), 667
Tail-fibre extension, T-even, an improved description; the reaction of bacteriophage T6 with tryptophan, 667
TAKANO, T. (see also MATSUURA, Y.), 389
TAYLOR, W. R. (see also COHEN, F. E.), 821
Thiol groups of scallop myosin essential light-chains, protection by regulatory light chains, 141
3′-non-coding regions of alphavirus RNAs contain repeating sequences, 719
TÖRÖK, I. (see also MASON, P. J.), 21
Transcription direction and regulation of *exuR*, a self-regulated repressor in *Escherichia coli* K-12, 221
Transcriptional potential of integrated mammary tumor virus DNA is determined by chromosomal position effects, 549
Transfer RNA, distance moved during translocation from the A site to the P site on the ribosome, 113
Translocation from the A site to the P site on the ribosome, distance moved by transfer RNA, 113
TRENT, D. W. (see also OU, J.-H.), 719
trpD gene nucleotide sequence, encoding anthranilate synthetase component II of *Escherichia coli*, 245
trp-p2 identification, an internal promoter in the tryptophan operon of *Escherichia coli*, 257
Tryptophan operon of *Escherichia coli*, identification of internal promoter *trp-p2*, 257
— pathway of *Pseudomonas aeruginosa*, genetic evidence for a positive-acting regulatory factor mediating induction, 67
— reaction with bacteriophage T6; an improved description of T-even tail-fibre extension, 667
TSANEV, R. (see also POSPELOV, V.), 79
TSHUMPER, G. & CARBON, J., Delta sequences and double symmetry in a yeast chromosomal replicator region, 293
TSUI, W.-C. (see also FERSHT, A. R.), 37
α-Tubulin genes, organization and expression in *Drosophila melanogaster*; one member of the α-tubulin multigene family is transcribed in both oogenesis and later embryonic development, 449
Twisted single crystals of *Bombyx mori* silk fibroin and related model polypeptides with β structure; a correlation with the twist of the β sheets in globular proteins, 345

UDVARDY, A. (see also MASON, P. J.), 21
ULLRICH, A., GRAY, A., GOEDDEL, D. V. & DULL, T. J., Nucleotide sequence of a portion of human chromosome 9 containing a leukocyte interferon gene cluster, 467
Unfolding and refolding of the constant fragment of the immunoglobulin light chain, 891
— — — — — reduced constant fragment of the immunoglobulin light chain. Kinetic role of the intrachain disulfide bond, 911
Untranslated messenger ribonucleoprotein particles from mouse sarcoma ascites cells, functional characteristics; possible relation to the control of messenger RNA utilization, 567
UNWIN, P. N. T. (see also KÜHLBRANDT, W.), 431

VASSILEV, L. (see also POSPELOV, V.), 79
Vesicular stomatitis virus, pathway of entry leading to infection, 609
Viral gene expression and DNA replication, effect of mutations at a T antigen binding site; regulatory mutants of SV40, 531
Virus, mammary tumor, chromosomal position effects determine transcriptional potential of integrated virus DNA, 549

–, Semliki Forest, extreme ends of the genome are conserved and rearranged in the defective interfering RNAs, 731
–, vesicular stomatitis, pathway of entry leading to infection, 609

WAJCMAN, H., AGUILAR I BASCOMPTE, J. L., POYART, C. & BOHN, B., Structural and functional studies of hemoglobin ($\alpha_2\beta_2$ 94 Asp (FG_1) → His). Consequences of altering an important intrachain salt bridge involved in the alkaline Bohr effect, 185
WALLIMANN, T., HARDWICKE, P. M. D. & SZENT-GYÖRGYI, A. G., Regulatory and essential light-chain interactions in scallop myosin. II. Photochemical cross-linking of regulatory and essential light-chains by heterobifunctional reagents, 153
– (see also HARDWICKE, P. M. D.), 141

X-ray fibre diffraction and scanning transmission electron microscopy of Pf1 bacteriophage replication–assembly complex, 279

YAMAMOTO, K. R. (see also FEINSTEIN, S. C.), 549
Yeast chromosomal replicator region, delta sequences and double symmetry, 293
YOUNG, I. G. (see also ANDERSON, S.), 683

ZULAUF, M. (see also DEVAUX, C.), 927